

# 1970

**OPERATING  
SUMMARY**

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# **MEAFORD**

***water  
treatment  
plant***

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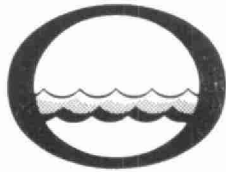
Division of Plant Operations

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*Water management in Ontario*

Ontario  
Water Resources  
Commission

135 St. Clair Ave. W.  
Toronto 195  
Ontario

Once again we have the privilege of submitting to you our latest detailed report on financial progress and technical activity at your water treatment plant.

The statistical information contained in this annual operating summary will undoubtedly be a useful barometer of efficiency. Of particular interest will be the comments and recommendations of the regional operations engineer, who was intimately connected with day-to-day operation throughout 1970.

Together with the extensive cost data provided, this information should assist greatly in your general understanding of the problems met and dealt with, and in furnishing a yardstick for possible future expansion.

D. S. Caverly,  
General Manager.

D. A. McTavish, P. Eng.,  
Director,  
Division of Plant Operations.

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**MEAFORD**  
**water treatment plant**

operated for

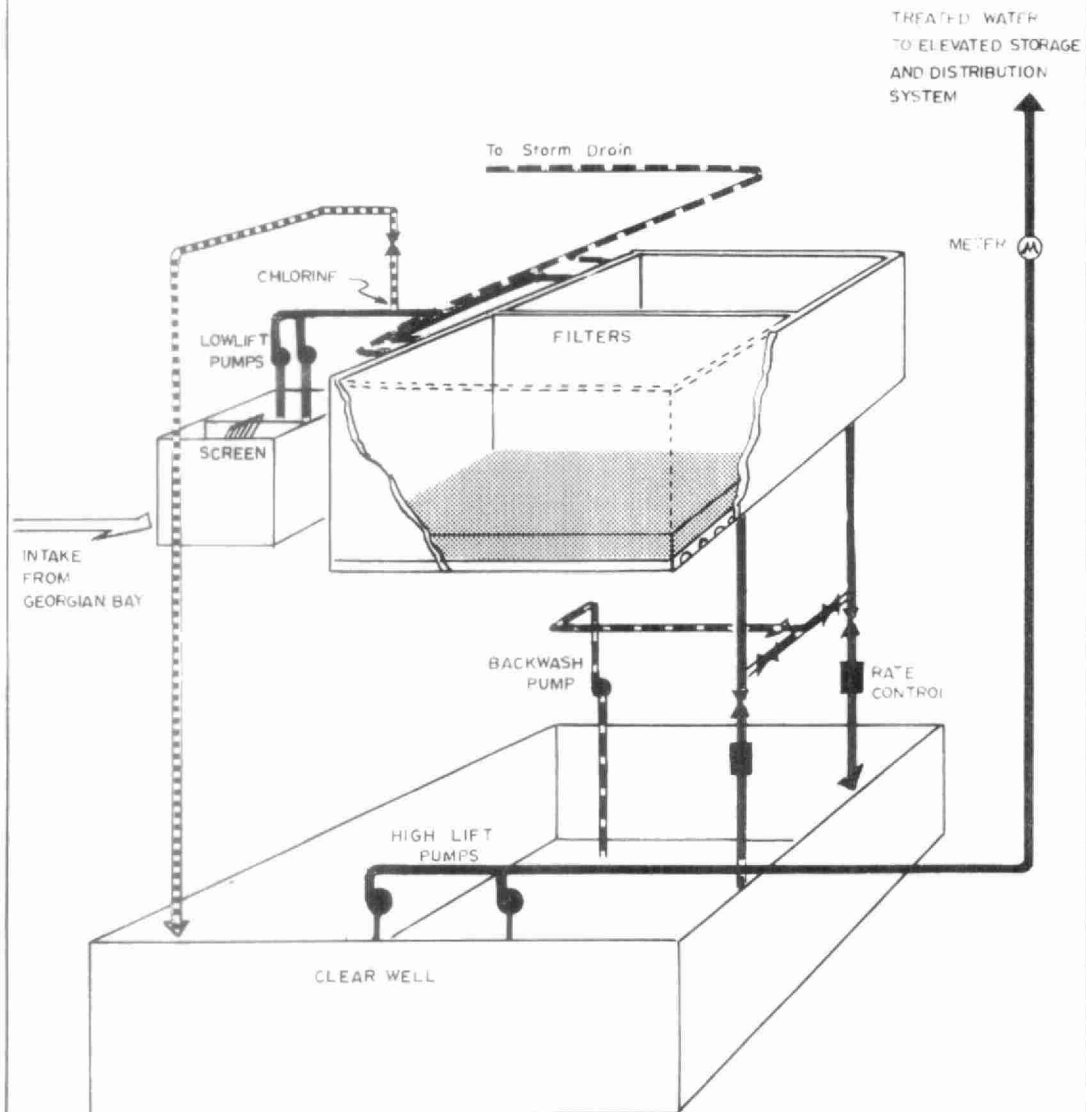
THE TOWN OF MEAFORD

by the

ONTARIO WATER RESOURCES COMMISSION

**1970 ANNUAL OPERATING SUMMARY**

# MEAFORD WATER TREATMENT PLANT



## DESIGN DATA

PROJECT NO.	6-0029-59	NOMINAL CAPACITY	2.88 mgd
CAPACITY OF UNITS			
Low Lift - Two 3 mgd @ 55'		High Lift - One 2.0 mgd @ 172'	
Filters - 2.88 mgd @ 1.7 gpm/ft <sup>2</sup>		One 2.7 mgd @ 187'	

### RAW WATER SOURCE

Nottawasaga Bay

### INTAKE

- depth about 22 ft.
- 877' of 30" pipe

### SCREENING

Chamber Size: 15' x 5' x 14'  
Screens: Two 5' x 11'

### LOW LIFT PUMPS

Type: Fairbanks-Morse vertical turbine  
Size: Two 2100 gpm @ 55'

Auxilliary Power: Chrysler Industrial  
Engine (on #2 L.L. pump)

### CHLORINATOR

Type: F-P gas  
Size: One 40 lb/day

### FILTER

Type: Graded Anthrafilt  
Size: Two 25' x 25'  
Surface Wash: Palmer

### CLEARWELL

Capacity: 200,000 gal.

### HIGH LIFT PUMPS

#1 H. L. Pump  
Type: Fairbanks-Morse  
Size: One 1170 gpm @ 172'

#2 H. L. Pump  
Type: DeLaval  
Size: 2000 gpm @ 180'  
Auxilliary Power: GMC Diesel

### BACKWASH PUMP

Type: Fairbanks-Morse  
Size: One 6500 gpm @ 38'

## PROJECT COSTS

NET CAPITAL COST (Final)	\$483, 129.09
DEDUCT - Portion financed by CMHC/MDLB (Final)	—
Long Term Debt to OWRC	<u>\$483, 129.09</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1970	<u>\$171, 450.85</u>
Net Operating	\$ 19, 490.60
Debt Retirement	12, 822.00
Reserve	1, 852.53
Interest Charged	<u>27, 067.89</u>
TOTAL	<u>\$ 61, 233.02</u>

### RESERVE ACCOUNT

Balance @ January 1, 1970	\$ 34, 829.06
Deposited by Municipality	1, 852.53
Interest Earned	<u>2, 290.48</u>
	\$ 38, 972.07
Less Expenditures	<u>785.86</u>
Balance @ December 31, 1970	<u>\$ 38, 186.21</u>



## 1970 OPERATING COSTS

JAN	0.00
FEB	2053.30
MAR	2763.82
APR	423
MAY	2218.12
JUN	1454.74
JUL	0.00
AUG	4677.86
SEP	443.47
OCT	4952.47
NOV	0.00
DEC	922.59

## TOTAL ANNUAL COST

NET OPERATING	32 %
DEBT RETIREMENT	21 %
INTEREST	44 %
RESERVE FUND	3 %

## Yearly Operating Costs

YEAR	MILLION GALLONS TREATED	TOTAL OPERATING COSTS	COST PER THOUSAND GALLONS
1966	416.746	\$14,171.63	3 cents
1967	302.046	14,720.93	5 cents
1968	327.840	16,574.84	5 cents
1969	338.6	19,893.96	6 cents
1970	323.0	19,490.60	6 cents

# '70 REVIEW

FLows	DAILY FLOW mil gal	OCCURRING IN THE MONTH OF	MONTHLY FLOW mil gal	OCCURRING IN THE MONTH OF
Average	.885	—	26.9	—
High	1.050	August	32.6	August
Low	.813	January	25.2	January

## GENERAL

The filtration plant is operated for the Ontario Water Resources Commission by the Meaford Public Utilities Commission. It is done efficiently and economically.

Water consumption dropped slightly from 334 million gallons in 1969 to 323 million gallons in 1970.

The chemical quality of the treated water was within the desirable range for potable water.

The filters remove on average more than 50% of the raw water turbidity.

## EXPENDITURES

The total cost of operation in 1970 was \$19,490.00, almost unchanged from 1969. The unit operating cost of producing treated water was 6 cents per 1,000 gallons. The total cost of production including debt retirement, interest, reserve and operating was approximately 18 cents per 1,000 gallons.

## CHLORINATION and DISINFECTION

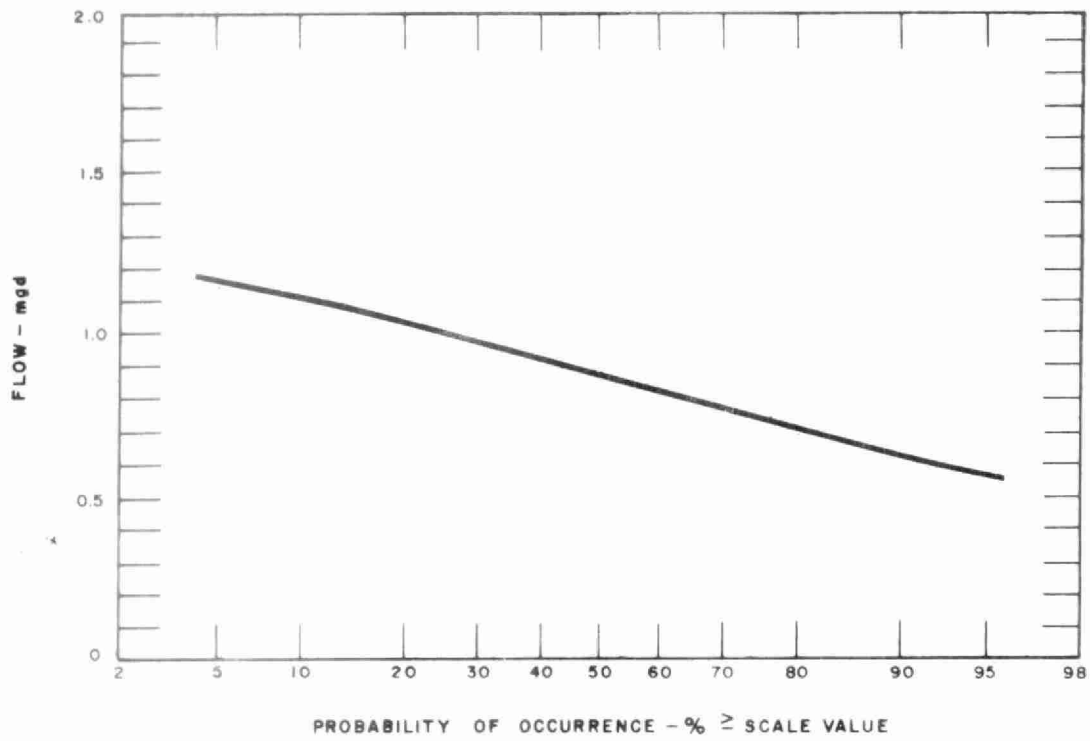
A total of 3251 pounds of chlorine was used in 1970 to maintain an average residual in the treatment water of 0.3 mg/l. Regular sampling of the water leaving the plant showed a zero coliform content.

## **CONCLUSIONS**

Arrangements were made to replace the impeller and shaft of the duty pump which after good service was showing signs of wear. This was an opportune time to insert a slightly larger impeller and motor so that the pump can better cope with the high demand during summer.

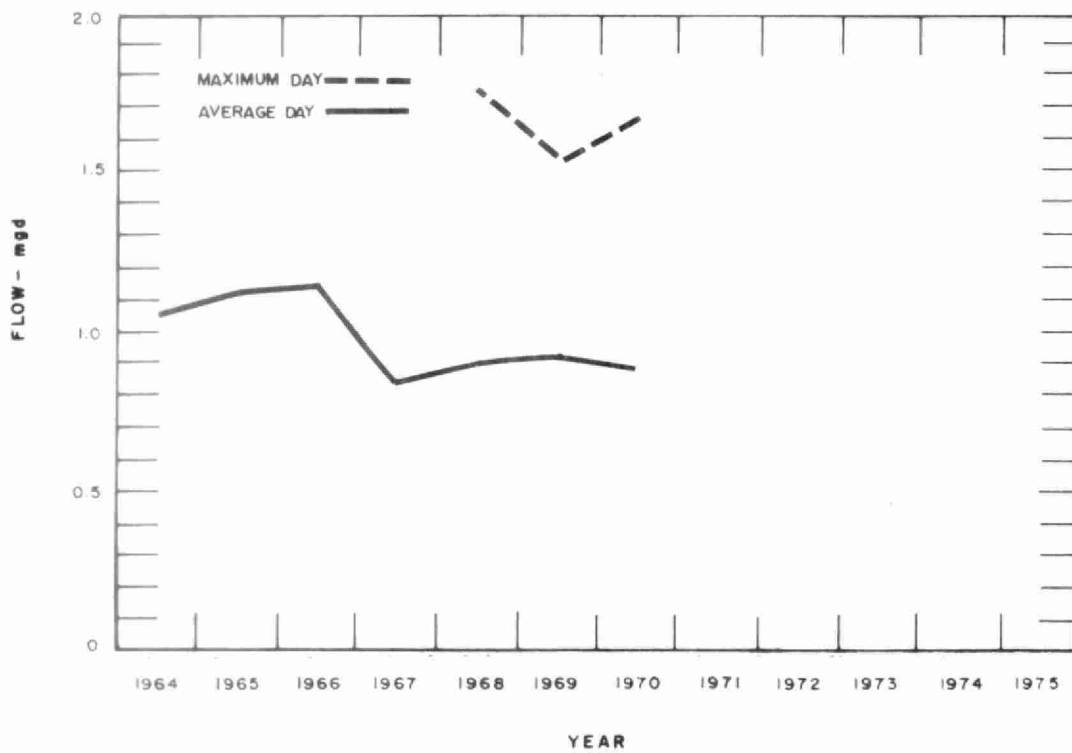
A point of interest is that 15% of the time (presumably in midsummer) the temperature of the raw water is 60° or more.

PROCESS DATA



## FLows

NOMINAL CAPACITY - 2.8 mgd



## PLANT FLOWS

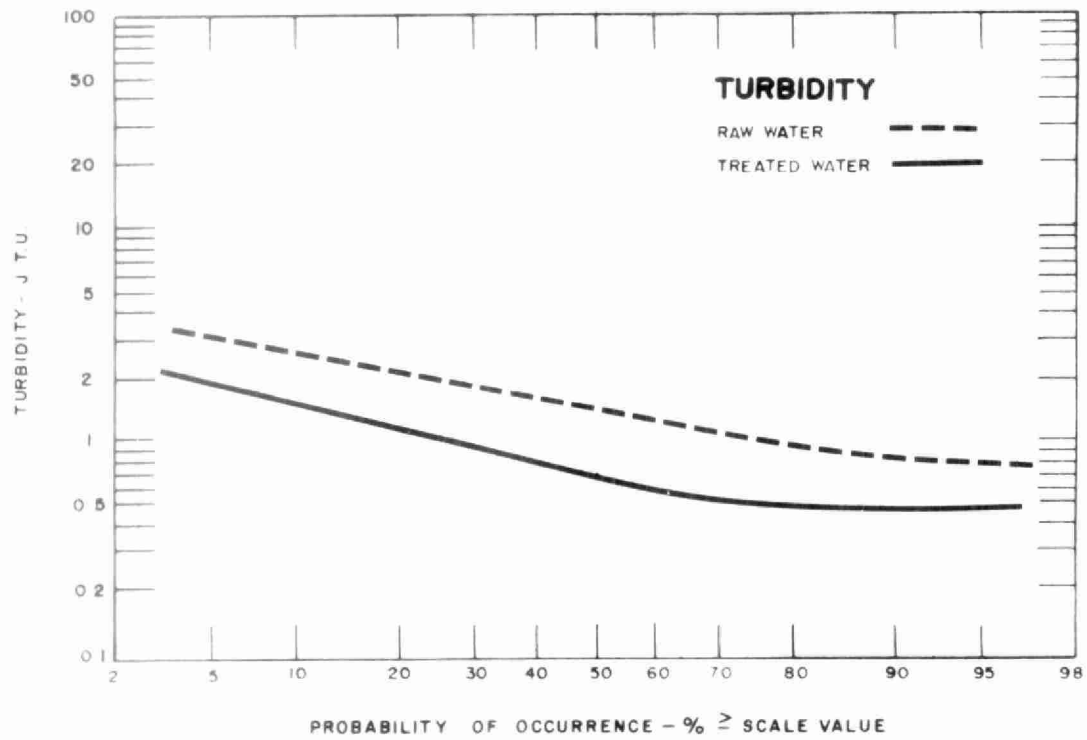
MONTH	TOTAL PLANT OUTPUT mil gal	AVERAGE DAILY FLOW mil gal	MAXIMUM RATE mgd	MAXIMUM DAILY FLOW mil gal	MAXIMUM 3-DAYS' FLOW mgd
JANUARY	25.2	.813	1.73	.93	.93
FEBRUARY	23.7	.845	1.73	.97	.93
MARCH	25.2	.813	1.73	.94	.92
APRIL	25.3	.844	1.73	.97	.96
MAY	26.8	.864	1.73	1.05	1.02
JUNE	30.8	1.028	1.73	1.54	1.47
JULY	27.1	.874	1.73	1.24	1.14
AUGUST	32.6	1.050	1.73	1.67	1.64
SEPTEMBER	26.0	.868	1.73	1.04	.98
OCTOBER	27.4	.883	1.73	1.04	1.01
NOVEMBER	27.2	.907	1.73	1.06	1.03
DECEMBER	25.7	.830	1.73	1.03	1.00
TOTAL	323.0				
AVERAGE		.885	(MAXIMUM VALUES FOR THE YEAR)		
			1.73	1.67	1.47

## CHLORINATION and DISINFECTION

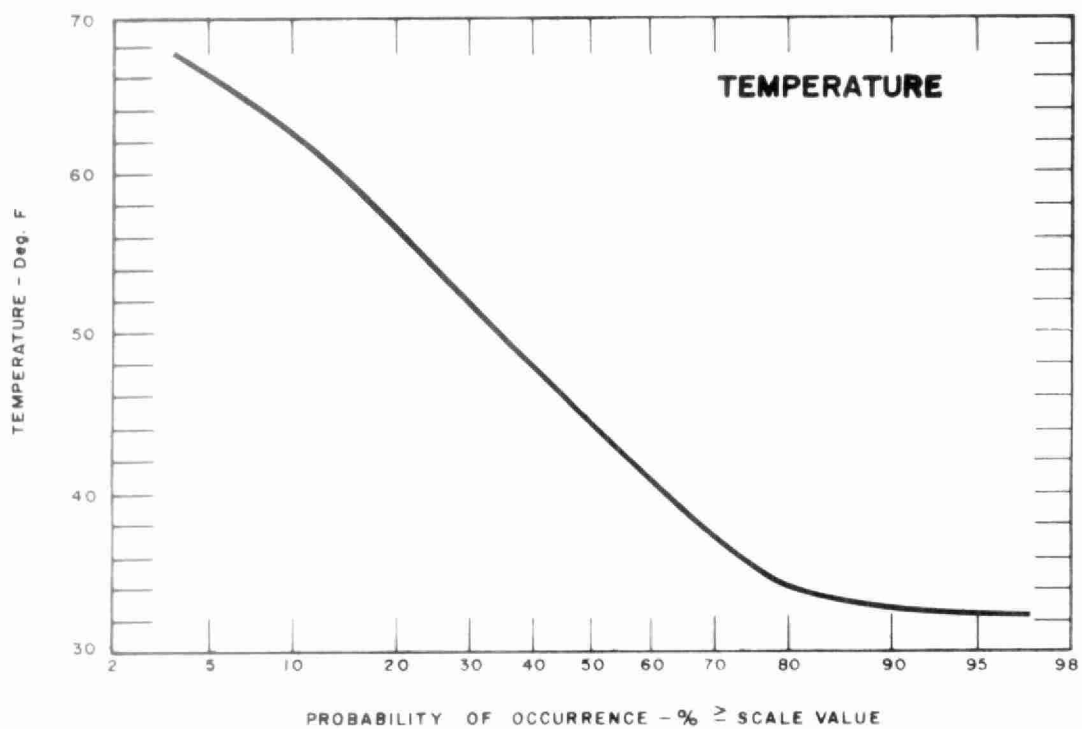
MONTH	RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM		CHLORINATION			
	NUMBER OF SAMPLES WITH COLIFORMS PER 100 ml OF:					No. of Samples Taken	No. with Coliform Organisms	No. of Samples Taken	No. with Coliform Organisms	CHLORINE USED lb	DOSAGE		RESIDUAL in Plt. Eff. mg/l
	0	1 - 4	4 - 32	32-320	> 320						pre-mg/l	post mg/l	
JAN	1	0	0	1	2	4	0	8	0	235	.9	0	.3
FEB	1	1	0	1	1	4	0	8	0	206	.9	0	.3
MAR	1	0	4	1	0	5	0	10	0	225	.9	0	.4
APR	0	0	0	2	2	4	0	7	0	232	.9	0	.4
MAY	1	1	0	1	1	4	0	8	0	244	.9	0	.4
JUNE	1	0	0	1	1	3	0	4	0	299	1.0	0	.4
JULY	2	0	1	1	0	8	0	4	0	296	1.1	0	.3
AUG	0	0	2	1	2	9	0	6	0	369	1.1	0	.3
SEPT	0	0	1	1	2	4	0	8	0	292	1.1	0	.3
OCT	0	0	1	0	3	4	0	7	0	303	1.1	0	.3
NOV	2	0	0	2	1	5	0	10	0	284	1.0	0	.3
DEC	1	1	0	2	0	4	0	7	0	266	1.0	0	.3
TOTAL						58	0	87	0	3251			
AVERAGE	(NOTE: Geometric Mean)									271	1.0	0	.3

## FILTER OPERATION

MONTH	TURBIDITY - in J.T.U.				FILTER RUN		FILTER RATE		FILTER WASH
	APPLIED		EFFLUENT		AVERAGE hours	MINIMUM hours	AVERAGE gpm/ft <sup>2</sup>	MAXIMUM gpm/ft <sup>2</sup>	% of plant output
	AVG.	MAX.	AVG.	MAX.					
JAN	1.1	4.1	.5	2.0	84	72	.45	1.75	2.1
FEB	.9	1.0	.4	.5	84	72	.47	1.75	2.5
MAR	.9	1.0	.4	.5	84	72	.45	1.75	2.4
APR	1.7	4.6	.8	2.3	84	72	.47	1.75	2.9
MAY	1.4	4.4	.7	2.1	84	72	.48	1.75	3.0
JUNE	1.1	1.9	.5	.8	84	48	.57	1.75	2.8
JULY	1.2	3.3	.5	1.4	84	72	.49	1.75	3.2
AUG	1.3	5.1	.6	2.5	84	72	.58	1.75	1.8
SEPT	1.0	1.6	.5	.8	84	72	.48	1.75	2.3
OCT	1.0	1.9	.5	.9	84	72	.49	1.75	2.2
NOV	1.3	3.4	.6	1.7	84	72	.50	1.75	1.9
DEC	3.5	12.1	1.6	5.3	84	72	.46	1.75	2.3
AVERAGE	1.3		.7		84		.49		2.4
EXTREME		12.1		5.3		48		1.75	



## WATER QUALITY





## PHYSICAL CHARACTERISTICS

MONTH	TURBIDITY		COLOUR		TEMPERATURE	
	Jackson Turbidity Units		Apparent Colour Units		Fahrenheit	Degrees
	RAW WATER	PLANT EFFLUENT	RAW WATER	PLANT EFFLUENT	AVERAGE	MAXIMUM
JANUARY	1.1	.5			35	37
FEBRUARY	.9	.4			32	32
MARCH	.9	.4			31	32
APRIL	1.7	.8			32	35
MAY	1.4	.7			38	42
JUNE	1.1	.5			45	50
JULY	1.2	.5			54	61
AUGUST	1.3	.6			65	68
SEPTEMBER	1.0	.5		<5	60	65
OCTOBER	1.0	.5			54	57
NOVEMBER	1.3	.6			45	49
DECEMBER	3.5	1.6			38	43
AVERAGE	1.3	.7			44	
MAXIMUM	12.1	5.3				68

## CHEMICAL CHARACTERISTICS

PROPERTY	RAW WATER				PLANT EFFLUENT				DESIRABLE STANDARDS
	Number of Samples	Average	Maximum	Minimum	Number of Samples	Average	Maximum	Minimum	
HARDNESS mg/l as $\text{CaCO}_3$					1	92	92	92	80 - 100
ALKALINITY mg/l as $\text{CaCO}_3$					1	75	75	75	30 - 100
IRON mg/l Fe					1	.10	.10	.10	< 0.3
CHLORIDE mg/l $\text{Cl}^-$					1	6	6	6	< 250
pH					1	7.9	7.9	7.9	

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